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Washington, D.C. 20231

Our Ref: 894-4/MBE
Date: April 25, 2000

PTO
09/558224
U.S.

04/26/00

Dear Sir:

Transmitted herewith for filing is the patent application of

Inventor: Joel Kligman

Title: HYBRID WIRED/WIRELESS VIDEO SURVEILLANCE SYSTEM

Enclosed are:

- (X) Disclosure
- (X) Claims
- (X) Abstract
- (X) Formal drawings (4 sheets)
- (X) Declaration/Power of Attorney with priority claim
- (X) 2 Verified statement(s) establishing small entity status under 37 C.F.R. 1.9 and 37 C.F.R. 1.27.
- () Assignment(s)
- () Certified copy of the priority document(s)
- (X) Cheque in the amount of **\$345.00** in payment of the required fees.

THE FILING FEE HAS BEEN CALCULATED AS SHOWN BELOW:

	No. Filed	No. Extra
Basic Fee		
Total Claims	5-20	
Indep. Claims	1- 3	
() Multiple dependent claims presented		

Small Entity	
RATE	FEE
	\$345.00
x 9=	\$
x 39=	\$
+130=	\$
TOTAL	\$345.00

Large Entity	
RATE	FEE
	\$690.00
x 18=	\$
x 78=	\$
+260=	\$
TOTAL	\$

The Commissioner is hereby authorized to charge any deficiency or credit any overpayment in the enclosed fees to our Deposit Account No. 500663. A signed copy of this letter is enclosed if required for this purpose.

Please direct all correspondence and telephone inquiries to the undersigned at the address below.

Respectfully submitted,

Mark B. Eisen
Reg. No. 33,088
(416) 971-7202, Ext. 242

Dimock Stratton Clarizio
20 Queen Street West, Suite 3202, Box 102
Toronto, Ontario, Canada M5H 3R3

Applicant or Patentee: Joel Kligman
Serial or Patent No.: _____
Filed or Issued: _____

**VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY
STATUS (37 CFR 1.9(f) and 1.27(b)) - SMALL BUSINESS CONCERN**

As an official empowered to act on behalf of the Small Business Concern identified below:

NAME OF SMALL BUSINESS CONCERN Strategic Vista International Inc.
ADDRESS OF SMALL BUSINESS CONCERN 300 Alden Road, Markham, Ontario, Canada L3R 4C1

I hereby declare that the above small business concern qualifies as a Small Business Concern as defined in 37 C.F.R. §1.9(d) for purposes of paying reduced fees to the Patent and Trademark Office under §§ 41(a) and (b) of Title 35, United States Code with regard to the invention entitled:

HYBRID WIRED/WIRELESS VIDEO SURVEILLANCE SYSTEM

described in

☒ the specification filed herewith.

☐ application serial no. _____, filed _____

☐ patent no. _____, issued _____

The above Small Business Concern has not assigned, granted, conveyed or licensed and is under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 C.F.R. §1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 C.F.R. §1.9(d) or a nonprofit organization under 37 C.F.R. §1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed or licensed or am under an obligation under contract or law to assign, grant, convey or license, any rights in the invention is listed below:

☒ no such person, concern or organization

☐ persons, concerns or organizations listed below:

Full name _____
Address _____

☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

Full name _____
Address _____

☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in the above Small Business Concern's loss of entitlement to small entity status prior to paying, or at the time of paying, any fee due after the date on which status as a small entity is no longer applicable (37 C.F.R. §1.28(b)).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such wilful false statements may jeopardize the validity of the application, any patent issuing therefrom, or any patent to which this verified statement is directed.

NAME OF OFFICIAL: JOEL KLIGMAN
TITLE OF OFFICIAL: PRESIDENT

J. E. Kligman
Signature

April 19, 2000
Date

Applicant or Patentee: Joel Kligman
Serial or Patent No.: _____
Filed or Issued: _____

**VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY
STATUS (37 CFR 1.9(f) and 1.27(b)) - INDEPENDENT INVENTOR**

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 C.F.R. §1.9(c) for purposes of paying reduced fees under §§ 41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled:

HYBRID WIRED/WIRELESS VIDEO SURVEILLANCE SYSTEM

described in

☒ the specification filed herewith.

☐ application serial no. _____, filed _____

☐ patent no. _____, issued _____

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 C.F.R. §1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 C.F.R. §1.9(d) or a nonprofit organization under 37 C.F.R. §1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed or licensed or am under an obligation under contract or law to assign, grant, convey or license, any rights in the invention is listed below:

☐ no such person, concern or organization

☒ persons, concerns or organizations listed below:

Full name Strategic Vista International Inc.
Address 300 Alden Road, Markham, Ontario, Canada L3R 4C1
☐ INDIVIDUAL ☒ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

Full name _____
Address _____
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, any fee due after the date on which status as a small entity is no longer applicable (37 C.F.R. §1.28(b)).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such wilful false statements may jeopardize the validity of the application, any patent issuing therefrom, or any patent to which this verified statement is directed.

NAME OF INVENTOR

Joel Kligman

SIGNATURE OF INVENTOR



DATE

April 19, 2000

0958224-042600

HYBRID WIRED/WIRELESS VIDEO SURVEILLANCE SYSTEM

Field of Invention

5 This invention relates to closed circuit television (CCTV) observation systems. In particular, this invention relates to a CCTV system integrating a plurality of video cameras, at least one of which is a wireless camera, into a video monitor for closed circuit television surveillance of a premises or other location.

Background of the Invention

10 CCTV observation systems are utilized by businesses, homeowners, institutions and others for the purpose of providing surveillance and security. These systems comprise video monitors receiving video signals from various types of video cameras. A typical CCTV observation system includes one or more video monitors, to each of which may be connected one or more video cameras.

15 In a wired CCTV system, the video cameras are connected by a cable to the monitor(s) or to an intervening device such as a switcher or multiplexer. The monitor of a CCTV system may provide an input for a single camera or several inputs (channels) for connecting several cameras. In the case of a multiple-channel system the monitor may incorporate a switcher to alternate the video feed between the various cameras, or may incorporate a device which allows the images of a plurality of
20 cameras to be viewed on the monitor simultaneously, such as a "quad splitter" which multiplexes video feeds from multiple cameras and divides the viewing field of the monitor into a comparable number of smaller segments, each of which displays the video feed from a different camera. Up to four separate viewing segments have typically been provided in such systems.

25 Typically the installation of a wired CCTV observation system requires locating the video cameras in the desired positions and running a video cable to the desired monitor location (for example a security kiosk), or to a video processing device which is in turn coupled to the monitor. Where there is a clear path for the cable, such as in the case of a building under construction or where a drop ceiling is
30 available, the CCTV observation system is installed relatively easily by a skilled technician and occasionally may be installed by the end user.

However, should the installation location not have a readily available path for the video cable, this task becomes considerably more difficult. Often one or

more video cameras must be moved to a less advantageous location (from the surveillance perspective) in order to provide a path for the video cable. In such cases, considerable time and expense may be involved in relocating cameras and fishing wires through finished structures, or the field of surveillance may be substantially
5 compromised and the security benefits of the system thereby considerably reduced.

Wireless observation systems are also known, which consist of either a monitor incorporating a wireless receiver, or an external wireless receiver connected to a wired system monitor. These monitors and receivers may be either single channel or multi-channel, and receive an rf signal (either digital or analogue) representing the
10 video image received by the wireless video camera at any particular point in time. This allows for real time observation of the field of view of the camera(s) on the monitor. However, because the video signal is very data intensive, in order to provide real time surveillance in a wireless system the resolution of the image on the monitor is significantly lower than that of a wired system.

Conventional wireless CCTV observation systems do not provide connections for wired cameras. As a result, the higher resolution end performance available from wired cameras is not available in wireless CCTV surveillance systems. Moreover, wireless observation systems do not provide simultaneous multiple-field observation such as is available in wired CCTV systems incorporating a quad splitter.
15

The present invention overcomes these disadvantages by providing a CCTV observation system which accommodates a video feed from one or more wireless camera/transmitters to a single monitor which incorporates one or more wireless receivers and also provides inputs for wired cameras. In the preferred embodiment, the one or more wireless receivers are implemented into a multi-channel
20 monitor, so that the user may elect to utilize either wired or wireless cameras, depending upon the user's surveillance requirements and the availability of cable pathways at the installation location.

In the preferred embodiment the system of the invention utilizes a wireless communications data link, preferably in the 2.4 GHz frequency range, in
30 conjunction with wired camera channels. The system of the invention may thus be easily adapted to installation situations where using only wired cameras is impractical, due to installation limitations, and using only wireless cameras is unsuitable because of the lesser resolution provided thereby. In the system of the invention installers and end users may select either wireless or wired cameras, as dictated by the
35 circumstances of the installation.

In the preferred embodiment of the invention, the system of the invention provides a multi-channel monitor with an integrated signal splitter (e.g. quad splitter) and a wireless receiver. According to this embodiment, the signal from one or more wireless cameras may be received by the monitor and displayed on one of the monitor channels in both the single channel and quad mode. The invention further accommodates systems which incorporate multiple video receivers and/or multi-channel receivers, such that wireless signals may be received and viewed simultaneously on additional channels.

The present invention thus provides a closed circuit television observation system, comprising at least one wired video camera and at least one wireless video camera, at least one monitor having a plurality of channels, and at least one video port coupled to at least one channel for connection to the wired video camera, and a wireless receiver having at least one channel for receiving a video signal from the wireless video camera.

Brief Description of the Drawings

In drawings which illustrate by way of example only preferred embodiments of the invention,

Figures 1a and 1b are front and rear schematic views, respectively, of a hybrid wired/wireless CCTV observation system according to the invention,

Figures 2a and 2b are front and rear schematic views, respectively, of a four-channel system of the invention with sequential switching between video cameras,

Figures 3a and 3b are front and rear schematic views, respectively, of a four-channel system of the invention incorporating a quad splitter, and

Figures 4a and 4b are front and rear schematic views, respectively, of a further four-channel system of the invention incorporating a quad splitter .

Detailed Description of the Invention

Figure 1 illustrates an embodiment of the invention utilizing a single-channel monitor 10 incorporating a two- or four-channel wireless receiver 20. A wired camera 2 may be connected to the monitor 10 through the video port 12 and optional audio port 13. When a video cable is connected to the video port 12, the camera select switch 15 is switched to the 'wired' position to disconnect the wireless receiver 20 from the video feed, and the monitor 10 displays an image representing the field of

view of the camera 2. Alternatively, with the camera select switch 15 in the 'wireless' position the wireless receiver 20 is coupled to the video feed, and the monitor 10 displays an image representing the field of view of a selected wireless camera 4.

In one embodiment the wireless camera 4 is selected by externally accessible switch 22, which controls a tuner in the receiver 20. Each wireless camera 4 is assigned a frequency within the bandwidth of the receiver 20, and the position of the switch 22 determines the frequency to which the receiver is tuned for the video feed to the monitor 10. In this embodiment the monitor provides a single viewing segment, for the wired camera 2 or the selected one of the wireless cameras 4. In a further embodiment the receiver contains an internal sequencing switch (not shown) which sequences through the wireless channels to sequentially display the images from different cameras 4 on the monitor 10.

Figure 2 illustrates an embodiment of the invention utilizing a four-channel monitor 30 with sequential switching between channels. Each channel may accommodate either a wired camera 2 or a wireless camera 4 through video ports 32 and optional audio ports 33. In this embodiment the monitor 30 displays a single image corresponding to one of the cameras 2 or 4, selected by camera select switches 25 and receiver switch 22, or alternatively by an internal sequencing switch (not shown) which sequences through the wired and wireless channels to sequentially display the images from different cameras 2 and 4 on the monitor 30.

Figure 3 illustrates an embodiment of the invention utilizing a four-channel monitor 40, with an integrated quad splitter 48 which divides the display into four segments, each corresponding to a channel of the monitor 40. The monitor 40 accommodates three wired cameras 2 and comprises a single-channel wireless receiver 24 which receives an image from a wireless camera 4. The monitor 40 display thus incorporates four separate images, divided as shown in Figure 3a, to thus simultaneously provide multiple surveillance fields.

In the embodiment of Figure 3 the wireless receiver 24 may alternatively be provided with multiple channels (frequencies) for receiving signals from multiple wireless video cameras 4, and the wireless camera 4 displayed on the monitor 40 is selected by a tuner switch or an internal sequencing switch (not shown) as in the previous embodiments. Each wireless camera 4 is assigned a frequency within the bandwidth of the receiver 20, and the position of the tuner switch determines the frequency to which the receiver is tuned for the video feed to the monitor 10. The video image from the selected wireless camera 4 is displayed in the

monitor segment corresponding to the wireless channel, and the receiver 24 may sequence through the wireless cameras 4, displaying a real-time or intermittent video image from each wireless camera 4 in turn in the monitor segment corresponding to the wireless channel.

5 Figure 4 illustrates a further embodiment of the invention utilizing a four-channel monitor 50 having video ports 52 and optional audio ports 53, with an integrated quad splitter 48 to divide the display into four segments, each corresponding to a channel of the monitor 50. The monitor 50 accommodates two wired cameras 2 and comprises a two-channel wireless receiver 24 which receives
10 images from up to two wireless cameras 4. The monitor 50 display thus incorporates four separate images, segmented as shown in Figure 4a, to thus simultaneously provide multiple surveillance fields.

 In the quad splitter embodiments the video image from each selected wireless camera 4 is displayed in the monitor segment corresponding to the wireless
15 channel to which the receiver 24 is connected, and the receiver 24 may sequence through the wireless cameras 4 to display a real-time video image from each wireless camera 4 in turn.

 In these embodiments a wireless video signal receiver/multiplexer (not shown) which accommodates up to four wireless video cameras may be utilized in
20 conjunction with the wired camera channels, so long as the wireless channel frequencies do not interfere with the wireless channel frequency or frequencies of the wireless receiver integrated into the monitor. Also, a plurality of single-channel wireless receivers may be used instead of a multi-channel wireless receiver 24.

 Thus, a video surveillance system according to the invention may
25 incorporate different combinations of wired cameras 2 and wireless cameras 4. In the case of wireless monitor channels the invention may sequence through real-time video images generated by the various wireless cameras 4, while providing a display of multiple camera segments, so that by a combination of screen splitting and camera sequencing a single monitor can be used to efficiently monitor cameras 2, 4 in many
30 different positions, either in real-time or intermittently through known video sampling and storage techniques.

 Each of the described embodiments may be implemented with a "video grabber" card 60 (shown in Figures 3 and 4), which outputs the video image displayed on the monitor through universal serial bus (USB) port 62 and a USB cable, or any

other compatible interface, to a processing appliance such as a personal computer (not shown). The computer may be programmed in known fashion to detect motion within one or more of the images, and in response thereto initiate a dial-up procedure to call a contact person or connect the video feed to a monitor at a remote location, actuate an
5 alarm (either local or remotely monitored, or both), and record the displayed images (either continuously or intermittently) for a selected duration following the event recorded by the computer.

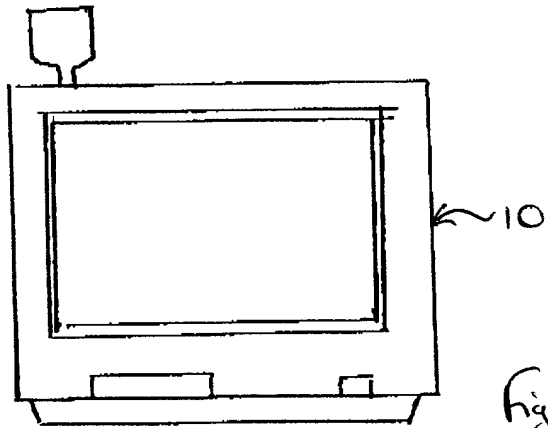
Although various preferred embodiments of the present invention have been described herein in detail, it will be appreciated by those skilled in the art, that
10 variations may be made thereto without departing from the spirit of the invention or the scope of the appended claims.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE
PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A closed circuit television observation system, comprising
at least one wired video camera and at least one wireless video camera,
at least one monitor having a plurality of channels, and at least one video
port coupled to at least one channel for connection to the wired video camera, and
a wireless receiver having at least one channel for receiving a video signal
from the wireless video camera.
2. The closed circuit television observation system of claim 1 in which the
wireless receiver has a plurality of channels for receiving video signals from a
plurality of wireless cameras.
3. The closed circuit television observation system of claim 2 in which the
monitor comprises a quad splitter for dividing the monitor display into four segments,
each segment displaying a video image corresponding to a different video camera.
4. The closed circuit television observation system of claim 3 in which one of
the segments displays a video image corresponding to a wireless camera, comprising
switching means for sequentially switching the wireless receiver between wireless
cameras.
5. The closed circuit television observation system of claim 3 in which the
monitor comprises circuitry for outputting the video image displayed on the monitor
to a processing appliance.

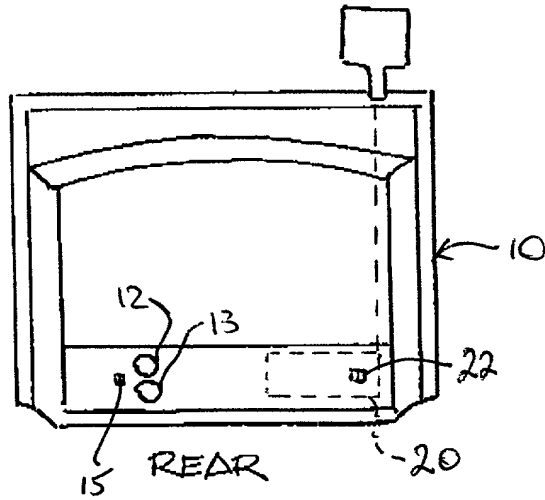
Abstract

A closed circuit television (CCTV) observation system accommodates a video feed from one or more wireless camera/transmitters to a single monitor, which also provides inputs for wired cameras. In the preferred embodiment wireless receivers are implemented into a multi-channel monitor, so that either wired or wireless cameras may be used, depending upon the user's surveillance requirements and the availability of cable pathways at the installation location. A video surveillance system according to the invention may incorporate different combinations of wired cameras and wireless cameras, and may sequence through real-time video images generated by the various wireless cameras while providing a display of multiple camera segments, so that by a combination of screen splitting and camera sequencing a single monitor can be used to efficiently monitor cameras in many different positions, in real-time. The monitor may be equipped with a video grabber card, which outputs the video image displayed on the monitor to a processing appliance such as a personal computer via a computer-compatible interface.



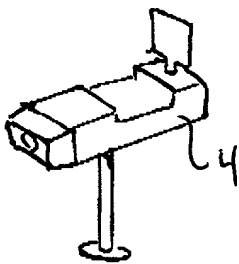
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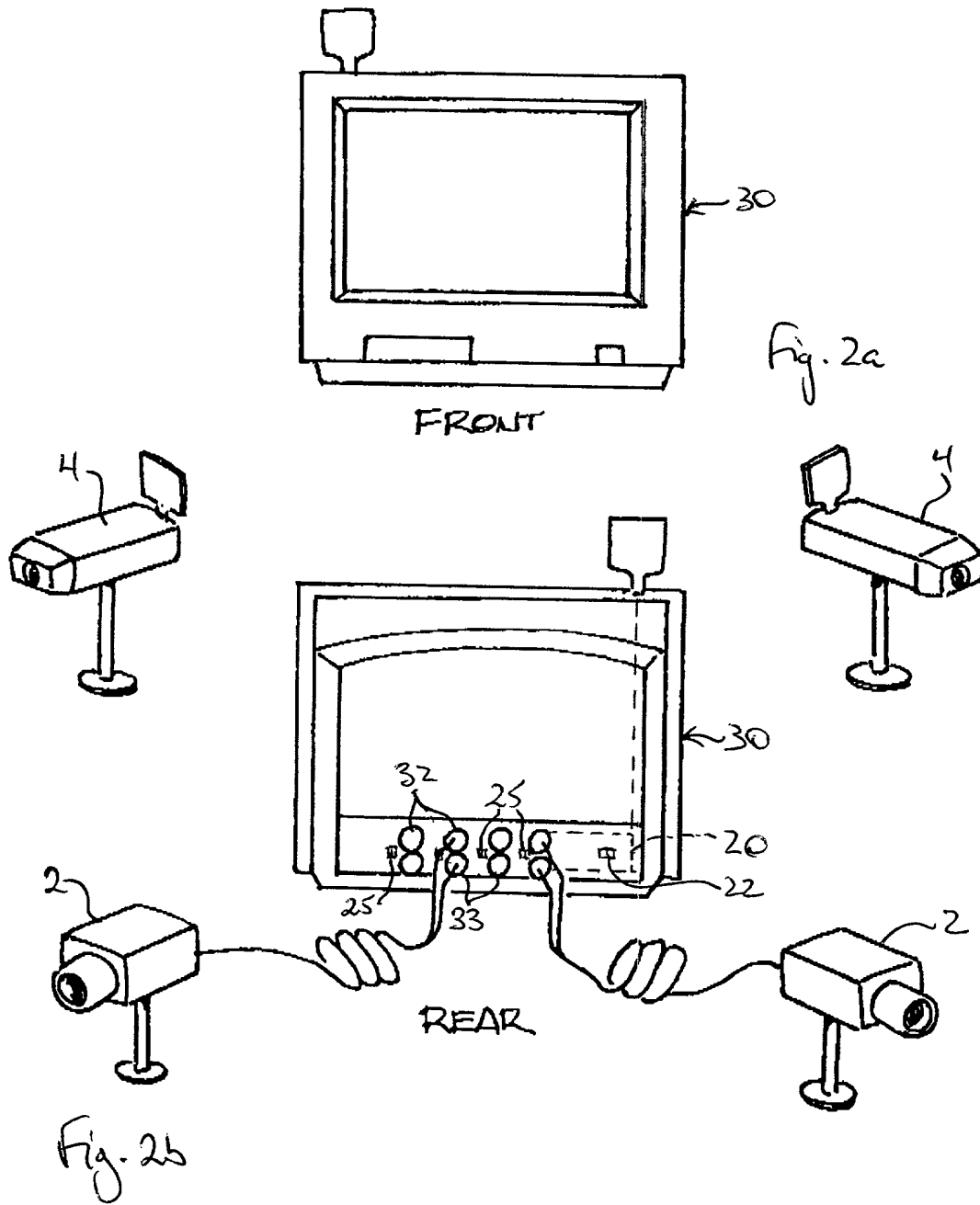
Fig. 1a



REAR

Fig. 1b





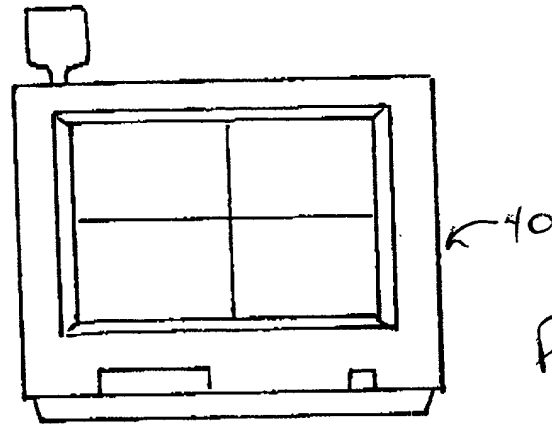


Fig. 3a

FRONT

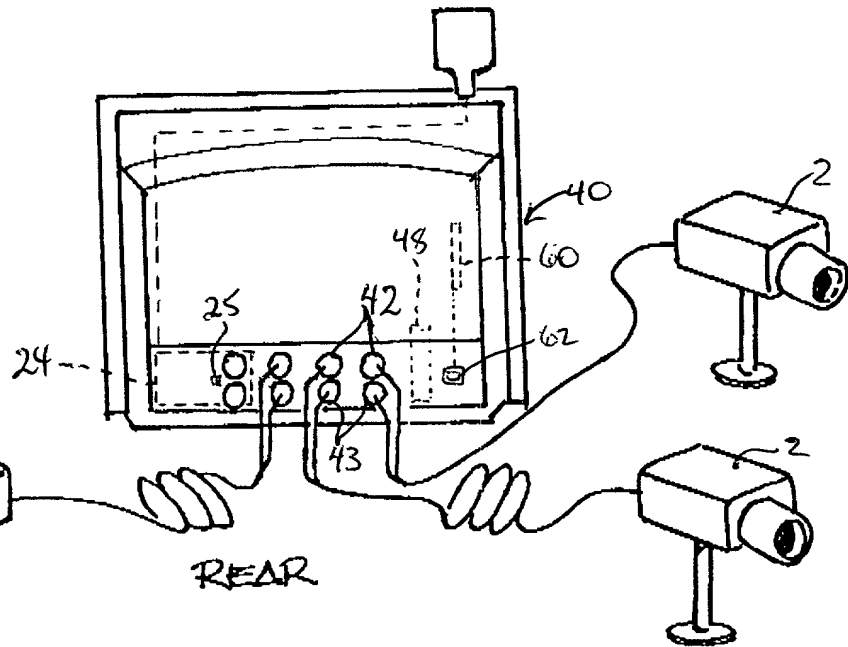
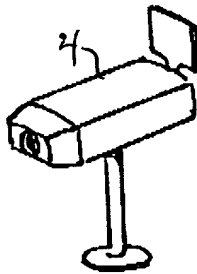


Fig. 3b

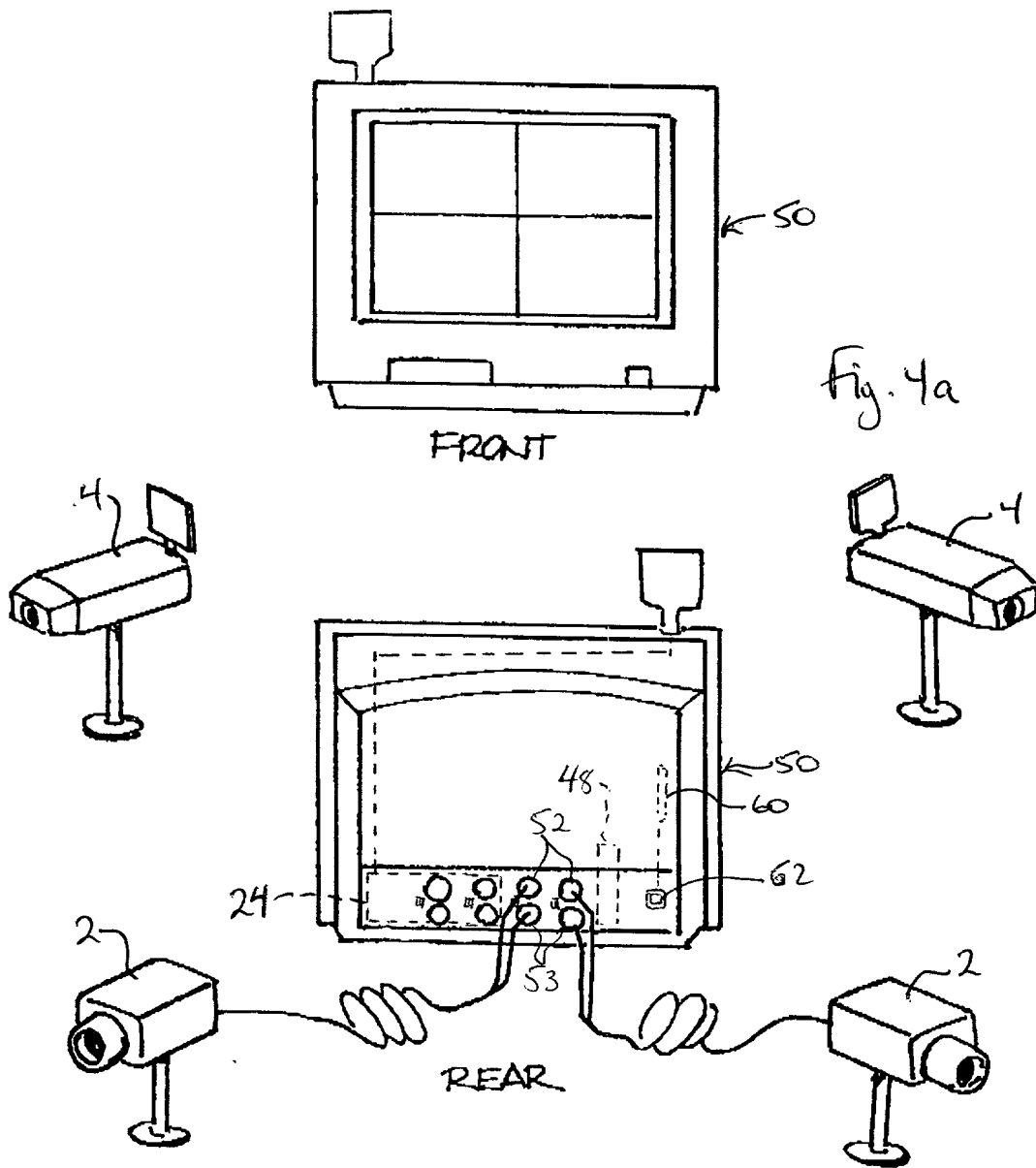


Fig. 4a

Fig. 4b

UNITED STATES

Utility Patent Application: Declaration, Power Of Attorney

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I verily believe I am the original, first and sole inventor of the subject matter which is claimed and for which a patent is sought on the design entitled _____

HYBRID WIRED/WIRELESS VIDEO SURVEILLANCE SYSTEM

the specification of which

- ☒ is attached hereto.
☐ was filed on _____ as
Application Serial No. _____
and was amended on _____
(if applicable)
☐ was described and claimed in PCT Application No. _____
filed on _____
and was amended under PCT article 19 on _____
(if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment specifically referred to in this Declaration. I acknowledge the duty to disclose all information which is known to me to be material to the patentability of this application in accordance with Title 37, C.F.R. §1.56.

PRIORITY CLAIM (35 USC § 119)

I hereby claim foreign priority benefits under Title 35, United States Code §119 and §172 of any foreign application(s) for patent or inventor's certificate(s) listed below and I have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application from which priority is claimed:

Prior Foreign Application(s):			Priority Claimed	
			Yes	No
<u>2,299,897</u>	<u>Canada</u>	<u>March 2, 2000</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(number)	(country)	(date filed)		
<u> </u>	<u> </u>	<u> </u>	<input type="checkbox"/>	<input type="checkbox"/>
(number)	(country)	(date filed)		
<u> </u>	<u> </u>	<u> </u>	<input type="checkbox"/>	<input type="checkbox"/>
(number)	(country)	(date filed)		

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined by Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Type of Application	Appl. Serial No.	Filing Date	Status (issued, pending, abandoned)
<input type="checkbox"/> U.S. <input type="checkbox"/> PCT	_____	_____	_____
<input type="checkbox"/> U.S. <input type="checkbox"/> PCT	_____	_____	_____
<input type="checkbox"/> U.S. <input type="checkbox"/> PCT	_____	_____	_____

DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such wilful false statements may jeopardize the validity of the application or any patent issuing therefrom.

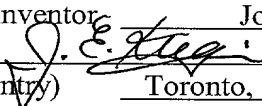
APPOINTMENT OF ATTORNEY

I hereby appoint Mark B. Eisen (Registration No. 33088), Dino P. Clarizio (Registration No. 37572), Michelle L. Wassenaar (Registration No. 40387), Cynthia J. Ledgley (Registration No. 34533) and David M. Reive (Registration No. 38792) as my attorneys and agents to prosecute this application, to make alterations and amendments thereto, to receive the patent and all correspondence relating to this application, and to transact all business in the U.S. Patent and Trademark Office connected therewith, and my attorneys are hereby given full power of substitution and revocation.

Address all correspondence and telephone calls to:

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Facsimile No. (416) 971-6638

Full name of sole or first inventor Joel Kligman
Inventor's signature  Date: April 19, 2000
Residence (city, state, country) Toronto, Ontario, Canada
Citizenship Canadian
Post Office Address 15 Invermay Avenue, Toronto, Ontario, Canada M3H 1Z1